[redacted]

OXC - 0148

3 December 1959

MEMORANDUM FOR : Deputy Director (Plans)

THROUGH : Acting Chief, DPD W.B.

SUBJECT : OXCART - Eastman Kodak Camera Design

25X1A 1. [redacted] of Eastman Kodak camera designs as of yesterday. Their ideas have changed somewhat from those presented in Boston at the meeting on 24 November; however, their data are still in a highly preliminary form. It is not possible at this time to draw any but highly tentative comparisons since we have not received anything approaching detail design ideas from either Perkin-Elmer on the 18-inch focal length Schmidt system nor the Eastman Kodak 18-inch focal length refracting lens system.

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2. [redacted] has promised to send technical data on his latest ideas to Jim Baker possibly today or certainly by tomorrow, and to have delivered similar data to us by next Monday. [redacted] of Eastman Kodak will attempt to see Baker in order to describe their latest ideas prior to 10 December. If this is not possible, he at least will have informal explanatory material and sketches to send to Baker and to ourselves prior to 10 December. [redacted] will not be available for the meeting with Baker on the 10th, but would be available for a discussion of their proposal on 15 December. 25X1A5a1 25X1A5a1

3. My opinion as of now, based on the limited amount of information from both companies, is that the proposed cameras appear to be nearly identical as to resolving ability. The coverage should be approximately the same in total but with differences in the fraction of the coverage available in convergent stereo. In the next few days, Eastman intend to improve this fraction. John
25X1A9a [redacted] PIC has promised to make available the results of a sampling of past experience to indicate in numerical terms the distribution of targets in classes of angularity across the flight line. With proper adjustment for changes in navigational accuracy and flight planning from present to future vehicle, we should be able to establish a rational criteria for total lateral coverage needed, and fraction thereof needed in convergent stereo.

4. Both companies are now thinking of continuously moving film supply and take-up with about equal film velocities. The danger of self-induced vibration from the cycling mirrors in the Eastman design seems to be partly equalled by the need for varying rotational speed of the large prisms in the Perkin-Elmer design.

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5. Both Perkin-Elmer and Eastman Kodak have attempted to stretch film over the compound curved focal surface of the 18-inch Schmidt design. Neither company has been successful in this. This does not mean that Perkin-Elmer must give up on the compound curved focal surface, but that some other method of distortion correction is likely to be needed. Perkin-Elmer have indicated an exposure of time about 1/75th of a second. Eastman Kodak intend to use an exposure of 1/100th to 1/200th of a second. This higher speed is an element in their favor in terms of image motion compensation.

6. Camera window installation appears to be of about equal difficulty since two windows of about equal size are required in either case. Eastman Kodak estimate a total weight under 500 lbs. Perkin-Elmer estimate about 650 lbs. The most significant difference aside from the basic optics is in the respective ideas on camera environment. Perkin-Elmer are planning a completely enclosed system; Eastman Kodak are thinking in terms of enclosing the film throughout its path, leaving the remainder of the system at near ambient temperature and pressure.

7. Unless some more obvious advantages in favor of the 18-inch Schmidt design become apparent, I would at the moment favor continuation of the Eastman design effort for a few more weeks, since I would certainly not at this time select the Eastman Kodak design over that of Perkin-Elmer. The possible advantage in weight together with some rather clever ideas in using basic camera optics during the off duty part of the cycle for V over H sensing make the Eastman Kodak design of considerable interest. Also, if Eastman Kodak are allowed to continue to the point where a cost estimate could be made by them, we would have a bench mark of comparison against the apparently high cost estimate from Perkin-Elmer.

25X1A9a 8. When further information is received from both organizations, Major [redacted] and myself will attempt a more orderly comparison of design features. We should hope to have this available at the meeting with Jim Baker.

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SIGNED

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Attachment:
1. System Requirements

CH/DB/DPD-DD/P: [redacted]k

Distribution:
Orig & 1 - Addressee w/1 att.
1 - AC/DPD w/o att.
2 - CH/DB/DPD w/o att.
1 - RI w/o att.
1 - DB/DPD w/o att.

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